

Fig. 10: Loosen control latch.

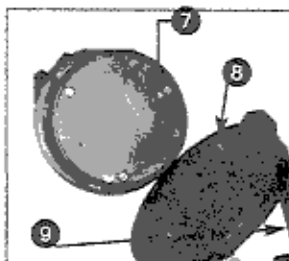


Fig. 11: High latitude leg mounting hole and corresponding attachment knob.



Fig. 12: Attach telescope to tripod.



Fig. 13: Level tilt-plate.



Fig. 14: Handbox HBX port.

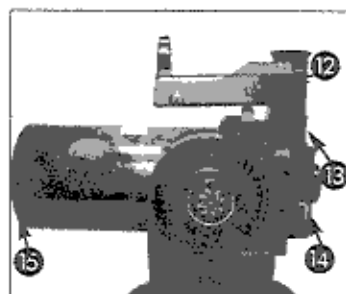


Fig. 15: Insert eyepiece.



Fig. 16: Tighten vertical lock.



Fig. 17: Tighten horizontal lock.

- Place the 26mm eyepiece (12, Fig. 15) into the eyepiece holder on the telescope and tighten the attachment thumbscrew (13, Fig. 15, not visible in photo) to a "firm feel" only. Make sure that the flip-mirror control (14, Fig. 15) is in the "up" position, as shown in the above photo. See page 8, for more information. Remove the dust cover (15, Fig. 15) from the end of the telescope tube.
- Make sure that the computer control panel power switch (A, Fig. 2) is in the OFF position. Remove the AutoStar handbox and the coiled cord from the packing materials. Plug one end of the cord into the HBX port (C, Fig. 2) and the other end of the coiled cord into the coiled cord port at the bottom of AutoStar handbox, as shown above.
- Tighten (to a "firm feel" only, do not overtighten) the vertical lock (Fig. 16) and the horizontal lock (Fig. 17).

Using SmartFinder

As with most astronomical telescopes, an eyepiece presents a narrow field of view to the observer. As a result it is sometimes difficult to locate objects just using your eyepiece. The SmartFinder has a projected red dot that helps you to locate objects as you move your telescope.

To turn on SmartFinder's red dot (continuous, without blinking):

- Press and hold MODE for two seconds. R.A and Dec. coordinates display.
- Keep pressing the Scroll Down key until "Finder Set: Set" displays.
- Press ENTER. "Finder Set: Intensity" displays.
- Press the Scroll Down key. "Finder: Blink On" displays.
- Press ENTER. A time value, in seconds, displays. For example, "00.5" may display. "00.5" is the amount of time, in seconds, that the red dot will blink "on."
(For this example, you may select or enter any value except "00.0.") Press ENTER.
- Press the Scroll Down key. "Finder: Blink Off" displays.
- Press ENTER. Use the Number keys to enter "00.0" or press the Scroll Down key until "00.0" displays. "00.0" is the amount of time in seconds that the red dot will remain "off." This value, along with the value you chose in the "Finder: Blink On" menu, allows the red dot to remain on without blinking. "00.0" means there is no "off" time, so the dot will remain on continuously, without blinking.
- Use these menus to set other blink rates. For example, if you select "00.1" in the Blink Off menu, and "00.2" in the Blink On menu, the red dot will blink on for .2 seconds and then blink off for .1 second, and then repeat the cycle until you change the values again.
- Press and hold MODE to exit this function.

Aligning SmartFinder

In order for the SmartFinder to be useful, it must first be aligned with the main telescope, so that both the SmartFinder and the main telescope are pointing at precisely the same location. To align the SmartFinder:

- Point the main telescope at some well-defined distant (perhaps a mile away) land object, such as a telephone pole or sign. Center the object, as precisely as

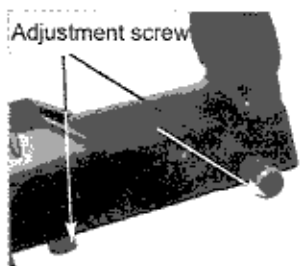


Fig. 18: Turn the top (13) or side (14) SmartFinder adjustment screws.



Fig. 19: Meade Super Plossl eyepieces.

Tip: If you plan on viewing using higher magnification eyepieces, first locate, center and focus the object using a low-power eyepiece (e.g., 26mm eyepiece). Then remove the low-power eyepiece and replace it with a higher-power eyepiece; the object should still be centered in the field of view. Objects are much easier to locate and center at lower powers; higher powers are employed simply by changing eyepieces.



Fig. 20a & 20b: Jupiter: Examples of the right amount of magnification and too much magnification.

possible, in the SP 26mm eyepiece's field of view. Tighten the vertical and horizontal locks (6 and 9, Fig. 1) so that the tube cannot move and the object remains centered.

2. While looking through the SmartFinder, turn the top or side alignment screws (13 and 14, Fig. 18), until the red dot of the SmartFinder points at precisely the same position as the view through the eyepiece of the main telescope.

The SmartFinder is now aligned to the main telescope. Unless the alignment screws are disturbed or the LNT Module is moved out of place, the SmartFinder should remain aligned indefinitely. **NOTE:** You may want to refine the SmartFinder alignment by performing this procedure on a bright star.

Choosing an Eyepiece

The magnification or power, at which a telescope is operating is determined by two factors: the *focal length of the telescope* and the *focal length of the eyepiece*.

Telescope Focal Length is the distance that light travels inside the telescope before reaching a focus. In the mirror-lens design of the ETX models, the focal length is compressed by the telescope's secondary mirror, so that a long focal length is housed in the short ETX optical tube. For example, the ETX-90PE's focal length is 1250mm or about 49". This means that if the ETX-90PE were a classical refracting-type of telescope, the optical tube would be more than four feet long instead of the ETX-90PE's compact 11" tube length.

Eyepiece Focal Length is the distance light travels inside the eyepiece before reaching focus. Focal length is usually printed on the side of the eyepiece, for example, 26mm. Low-power eyepieces are typically available in 26mm, 32mm and 40mm sizes (see **OPTIONAL ACCESSORIES**, page 42). The low-power eyepiece provided with your ETX is designed to provide a wide, comfortable field of view with high image resolution.

Calculating Magnification: On a telescope, such as the ETX, different eyepiece focal lengths are used to achieve different magnifications, from low to high. A 26mm eyepiece yields 48X ("48-power") on the ETX-90PE and 73X on the ETX-125PE. A variety of powers may be obtained with the addition of optional eyepieces as well as the #126 2X Barlow Lens which doubles the power of an eyepiece (see **OPTIONAL ACCESSORIES**, page 42). To calculate magnification, divide the focal length of the telescope's optical tube by the focal length of the eyepiece. For example ETX125PE:

Telescope Focal Length divided by Eyepiece Focal Length	= Power
1900mm divided by 26mm	= 73X
With Barlow: 73 x 2	= 146X

The eyepiece power or magnification is therefore 73X and 146X with the Barlow.

Most observers should have 3 or 4 eyepieces plus the #126 2X Barlow to achieve the full range of reasonable magnifications possible with ETX models.

ETX TIPS

Too Much Power?

Can you ever have too much power? If the type of power you're referring to is eyepiece magnification, yes, you can! The most common mistake of the beginning observer is to "overpower" a telescope by using high magnifications which the telescope and atmospheric conditions cannot reasonably support. Keep in mind that a smaller, but bright and well-resolved image is far superior to one that is larger, but dim and poorly resolved (see Figs. 20a and 20b). Powers above 300X should be employed only under the steadiest atmospheric conditions.

AutoStar can calculate the best eyepiece for you to use. Try out the "Eyepiece Calc" feature in the Utilities menu.

Most observers should have three or four additional eyepieces to achieve the full range of reasonable magnifications possible with the ETX telescopes. See **OPTIONAL ACCESSORIES**, page 42.